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EXAMINER	
TRAN, NGHI V	

ART UNIT	PAPER NUMBER
2151	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/970,457	QIU ET AL.	
	Examiner	Art Unit	
	Nghi V Tran	2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *176-228* is/are pending in the application.

4a) Of the above claim(s) *1-175* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *176-219,227 and 228* is/are rejected.

7)☒ Claim(s) *220-226* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/15/02; 07/08/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 184 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 184 recites the limitation "a network" in page 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 176-180 are rejected under 35 U.S.C. 102(e) as being anticipated by Wolff, U.S. Patent No. 6,185,601.

6. With respect to claim 176, Wolff teaches an I/O resource management system capable of managing I/O resources in an information delivery environment [see abstract and figs.1-2], comprising:

- an I/O resource model [i.e. load-balancer module] capable of modeling utilization of one or more of said I/O resources [col.13, lns.13-55]; and
- an I/O resource manager [i.e. resource manager module] in communication with said I/O resource model, said I/O resource manager being capable of managing one or more of said I/O resources based at least in part on said modeled utilization [figs.1-2 and col.9, lns.45-54 and col.12, lns.32-43].

7. With respect to claim 177, Wolff further teaches said I/O resource model is capable of modeling utilization of one or more of said I/O resources based at least in part on one or more system I/O performance characteristic [i.e. dynamic load rebalancing] associated with said I/O resources [col.2, lns.34-51].

8. With respect to claim 178, Wolff further teaches the value of one or more of said system I/O performance characteristics is estimated [col.11, lns.24-41 i.e. periodically report load-balancing utilization statistics].

9. With respect to claim 179, Wolff further teaches said I/O resource management system further comprises at least one I/O resource monitor [i.e. load-balance monitor] in communication with at least one of said I/O resource manager or said I/O resource model, said I/O resource monitor being capable of monitoring the value of one or more of said system I/O performance characteristics [col.52, ln.35 - col.53, ln.26 i.e. load balance monitor controls the load balance].

10. With respect to claim 180, Wolff further teaches said I/O resources comprise at least one of file system resources, storage system resources [118 i.e. storage], or a combination thereof [figs.1-2].

11. Claims 190-193, 199-200, 205-206, and 208-212 are rejected under 35 U.S.C. 102(e) as being anticipated by Goldzmidt et al., U.S. Patent No. 6,195,680 (hereinafter Goldzmidt).

12. With respect to claim 190, Goldzmidt teaches an I/O resource management system [fig.1a] capable of managing I/O resources for delivery of continuous media data [see abstract] to a plurality of viewers [i.e. client] from a storage system [i.e. cluster]

including at least one storage device or at least one partitioned group of storage devices [fig.2], said system comprising:

- an I/O resource monitor [i.e. monitoring the workload], said I/O resource monitor being capable of monitoring one or more system I/O performance characteristics associated with said I/O resources [col.5, lns.23-64];
- an I/O resource model in communication with said I/O resource monitor, said resource model being capable of modeling utilization of one or more of said I/O resources based at least in part on said one or more monitored system I/O performance characteristics [see abstract and col.3, lns.28-55 i.e. capable of handling a requests from a large number of incoming client agents and redirecting them to the streaming servers that are providing the multimedia]; and
- an I/O resource manager [1.1 i.e. control server] in communication with said I/O resource model, said I/O resource manager being capable of managing one or more of said I/O resources based at least in part on said modeled utilization [col.5, lns.33-64].

13. With respect to claim 191, Goldzmidt further teaches said storage system [i.e. cluster] comprises part of a content delivery system [i.e. streaming server] configured to be coupled to a network [fig.3d, col.9, lns.1-6 and col.4, lns.40-44].

14. With respect to claim 192, Goldzmidt further teaches said content delivery system is configured to be coupled to said network at an endpoint of said network [fig.3d, col.9, lns.1-6 and col.4, lns.40-44].

15. With respect to claim 193, Goldzmidt further teaches said storage system [i.e. cluster] includes at least two storage devices or at least two partitioned groups [col.5, lns.33-49] of storage devices for delivery of said continuous media data [figs.1-3].

16. With respect to claim 199, Goldzmidt further teaches said I/O resources comprise I/O capacity and buffer memory space [i.e. size] of said storage system [col.4, lns.34-53].

17. With respect to claim 200, Goldzmidt further teaches said storage system comprises at least two storage devices or two partitioned groups of storage devices [col.5, lns.33-49]; and wherein said one or more monitored system I/O performance characteristics [i.e. control server] comprise one or more system I/O performance characteristics at least partially reflective of workload distribution across said at least two storage devices or said at least two partitioned groups of storage devices [col.5, lns.23-64 i.e. control server and streaming server allow the control server to preferably monitor the workload of streaming server while redirecting incoming client agent].

18. With respect to claim 205, Goldzmidt further teaches said I/O resource manager is capable of monitoring said one or more system I/O performance characteristics at the logical volume level [col.5, lins.5-48 i.e. logical volume level is interpreted as a virtual cluster].

19. With respect to claim 206, Goldzmidt further teaches said I/O resource monitor is capable of monitoring said system I/O performance characteristics of said at least one storage device or at least one partitioned group of storage devices at the logical volume level [col.5, lins.5-48 i.e. logical volume level is interpreted as a virtual cluster].

20. With respect to claim 208, Goldzmidt further teaches said storage system includes at least two storage devices or at least two partitioned groups of storage devices [col.5, lns.33-49].

21. With respect to claim 209, Goldzmidt further teaches said I/O resource monitor is capable of monitoring a workload distribution across said at least two storage devices or at least two partitioned groups of storage devices [col.5, lns.32-49 i.e. monitoring the workload of the streaming servers].

22. With respect to claim 210, Goldzmidt teaches an information delivery storage system [see abstract and figs.1-3], said storage system comprising:

- a storage management processing engine [i.e. figs.1-3] that includes an I/O resource manager [i.e. control server], a logical volume manager [i.e. cluster], and a monitoring agent [i.e. client agent];
- said I/O resource manager, said logical volume manager, and said monitoring agent being in communication [col.4, lns.26-53]; and
- at least one storage device or group of storage devices coupled to said storage management processing engine [col.5, lns.33-48];
- wherein said information delivery storage system comprises part of an information management system configured to be coupled to a network [col.5, lns.49-64].

23. With respect to claim 211, Goldzmidt further teaches said storage management processing engine comprises one or more processing modules that are capable of performing at least one of I/O resource monitoring, I/O resource modeling, I/O resource management, or a combination thereof [col.3, lns.27-40 i.e. I/O resource management is interpreted as handling a requests from a large number of incoming client agents and redirecting them to the streaming servers that providing the multimedia data].

24. With respect to claim 212, Goldzmidt further teaches said I/O resource manager comprises a storage system workload monitor [col.5, lns.33-34 i.e. monitoring the workload of streaming server].

Claim Rejections - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

26. Claims 181-189 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolff as applied to claim 176 above, and further in view of Goldzmidt et al., U.S. Patent No. 6,195,680 (hereinafter Goldzmidt).

27. With respect to claim 181, Wolff further teaches said information delivery environment [see abstract] comprises delivery of non-continuous media data [col.4, lns.30-50 i.e. a data set can include a database or a file system] from an information management system [106B i.e. data transfer server or distributed I/O] in communication with said I/O resource management system [figs.1-2]; wherein said I/O resources comprise I/O capacity and buffer memory space of said information management system [col.5, ln.62 - col.6, ln.50]; and wherein said I/O resource manager is capable of balancing [i.e. load-balancing] said I/O capacity with said buffer memory space to ensure uninterrupted delivery of said non-continuous media data [col.19, lns.14-38 and col.11, lns.24-41].

However, Wolff is silent on delivery of continuous media.

In an I/O resource management system, Goldzmidt discloses said information delivery environment [fig.1] comprises delivery of continuous media data [see abstract].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Wolff in view of Goldzmidt by delivering of continuous media data because this feature is more efficiency in a higher information transfer rate. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Wolff in view of Goldzmidt in order to continue receiving real-time multimedia stream with minimal disruption [Goldzmidt, col.3, lns.9-11].

28. With respect to claim 182, Wolff further teaches said information management system comprises a storage system [118 i.e. storage], said storage system including said I/O resources and having at least one storage device or at least one partitioned group of storage devices [col.60, lns.59-67 and col.61, ln.55].

29. With respect to claim 183, Wolff further teaches said information management system comprises a content system [118 i.e. cluster node] configured to be coupled to a network [fig. 1B i.e. couple to private network].

However, Wolf is silent on said information delivery environment comprises delivery of continuous media data from said information management system to a network.

In an I/O resource management system, Goldzmidt discloses said information delivery environment [fig.1] comprises delivery of continuous media data [see abstract].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Wolff in view of Goldzmidt by delivering of continuous media data because this feature is more efficiency in a higher information transfer rate. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Wolff in view of Goldzmidt in order to continue receiving real-time multimedia stream with minimal disruption [Goldzmidt, col.3, lns.9-11].

30. With respect to claim 184, Wolff further teaches said content delivery system [118 i.e. cluster node] is configured to be coupled to a network at an endpoint of said network [fig.1B i.e. storage/cluster node couples to private network which is an endpoint of the network].

31. With respect to claims 185 and 186, Wolff is silent on said I/O resource manager is capable of allocating one or more I/O resources between background system I/O activities and delivery of said continuous media data.

In an I/O resource management system, Goldzmidt discloses said I/O resource manager [i.e. control server] is capable of allocating one or more I/O resources between background system I/O activities and delivery of said continuous media data [col.17, lns.7-23].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Wolff in view of Goldzmidt by allocating one or more I/O resources between background system I/O activities and delivery of said continuous media data because this feature is more efficiency in processing time. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Wolff in view of Goldzmidt in order to directly access the second streaming set without communicating with the control server [Goldzmidt, col.17, lns.21-23].

32. With respect to claim 187, Wolff further teaches said I/O resource manager is capable of at least one of performing I/O admission control [104B i.e. administrative server], determining read-ahead size, or a combination thereof [col.6, lns.21-50].

33. With respect to claim 188, Wolff is silent on said I/O resource model comprises an analytical-based resource model.

In an I/O resource management system, Goldzmidt discloses said I/O resource model comprises an analytical-based resource model [col.7, ln.23 - col.8, ln.33 i.e. an analytical-based resource model is inherent].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Wolff in view of Goldzmidt by adding a analytical-based resource model because this feature provides an alternated path to a streaming server having a lowest utilization rate [Goldzmidt, col.5, lns.55-64]. It is for

this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Wolff in view of Goldzmidt in order to continue to receive the multimedia streams with minimal or no interruption [Goldzmidt, col.3, lns.55-56].

34. With respect to claim 189, Wolff further teaches said I/O resource management system further comprises at least on I/O resource monitor in communication with said I/O resource model;

However, Wolff is silent on said I/O resource model comprises a measurement-based resource model.

In an I/O resource management system, Goldzmidt discloses said I/O resource model comprises a measurement-based resource model [see abstract i.e. the determination could be based on the rate measurement or monitoring mechanism falling below some threshold].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Wolff in view of Goldzmidt by adding a measurement-based resource model because this feature provides an alternated path to a streaming server having a lowest utilization rate [Goldzmidt, col.5, lns.55-64]. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Wolff in view of Goldzmidt in order to continue to receive the multimedia streams with minimal or no interruption [Goldzmidt, col.3, lns.55-56].

35. Claims 194-198, 201-204, 207, 213-219, and 227-228 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldzmidt, as applied in claim 193 above, and further in view of DE VOS et al., U.S. Patent Application Publication No. 2003/0110505 (hereinafter DE VOS).

36. With respect to claim 194, Goldzmidt further teaches said resource monitor is capable of monitoring a workload distribution across said at least two storage device or at least two partitioned groups of storage devices [col.5, lins.5-48 i.e. logical volume level is interpreted as a virtual cluster]; wherein said I/O resources comprise I/O capacity [col.4, lns.34-53]; and wherein said I/O resource model is capable of modeling said I/O capacity based at least in part on a workload distribution across said at least two storage devices or two or more partitioned group of storage devices [col.5, lins.5-48]; and where in said resource manager is capable of balancing [i.e. load-balancing heuristics] said I/O capacity with said buffer memory space to ensure uninterrupted delivery of said continuous media data to said plurality of viewers from said at least two storage devices or said at least two partitioned groups of storage devices [col.5, ln.49 - col.6, ln.60].

However, Goldzmidt is silent on said I/O resources comprise I/O capacity and buffer memory space of said information management system.

In an I/O resource management, DE VOS discloses said I/O resources comprise I/O capacity and buffer memory space [i.e. RAM] of said information management system [fig.2, paragraphs 0049 and 0085].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Goldzmidt in view of DE VOS by adding a buffer memory space because this feature increases the efficiency in processing time. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Goldzmidt in view of DE VOS in order to display by switching the virtual channels on a real-time basis and storing these simultaneously [DE VOS, paragraph 0096].

37. With respect to claim 195, Goldzmidt is silent on said buffer memory space comprises a part of an integrated cache/buffer memory of said storage system; wherein said I/O resource monitor is capable of monitoring a number of viewers that are reading data from said two or more storage device or partitioned groups of storage devices out of the total number of viewers being served by said storage system; and wherein said I/O resource manager is capable of balancing said I/O capacity with said buffer memory space to ensure uninterrupted delivery of said continuous media data to said viewers reading data from said two or more storage devices or partitioned groups of storage devices.

In an I/O resource management, DE VOS discloses said buffer memory space comprises a part of an integrated cache/buffer memory of said storage system [fig.2, paragraphs 0049 and 0085]; wherein said I/O resource monitor is capable of monitoring a number of viewers [paragraph 0001] that are reading data from said two or more storage device or partitioned groups of storage devices out of the total number of

viewers being served by said storage system [paragraph 0050]; and wherein said I/O resource manager is capable of balancing [i.e. a new delivery SMU can be loaded from the archive SMU or another delivery SMU, when the number of end users increases] said I/O capacity with said buffer memory space to ensure uninterrupted delivery of said continuous media data to said viewers reading data from said two or more storage devices or partitioned groups of storage devices [paragraph 0051].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Goldzmidt in view of DE VOS by monitoring a number of viewers because this feature will dynamically change to prevent the system from overloading [DE VOS, paragraph 000051]. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Goldzmidt in view of DE VOS in order to determine the number of end devices requesting the particular video and/or audio at a specific point in time [DE VOS, paragraph 0050].

38. With respect to claim 196, Goldzmidt further teaches I/O resource manager is capable of allocating [i.e. assigns] said I/O resources between background processing activities [i.e. reflectors] and delivery of said continuous media data [fig.6 and col.14, ln.61 - col.15, ln.12].

39. With respect to claim 197, Goldzmidt further teaches I/O resource manager [i.e. control server] is capable of at least one of performing I/O admission control [i.e. uses

the workload-related heuristics for its client admission process], determining read-ahead size, or a combination thereof [col.15, ln.66 - col.16, ln.22].

40. With respect to claim 198, Goldzmidt further teaches individual storage devices of said at least two storage devices or partitioned groups of storage devices comprise storage disk drives [col.5, lns.33-64]; and wherein said I/O resource model is capable of modeling utilization of one or more of said I/O resources based at least in part on one or more monitored system I/O performance characteristics associated with said I/O resources, said I/O system performance characteristics comprising at least one of seek and rotation latency, estimated transfer rate [i.e. effective bit rate of the stream], or combination thereof [see abstract and col.9, lns.7-22].

41. With respect to claims 201 and 207, Goldzmidt further teaches said one or more monitored system I/O performance characteristics comprise at least one of maximal aggregate consumption rate for each of said at least two storage devices [see abstract].

However, Goldzmidt is silent on said one or more monitored system I/O performance characteristics comprise at least portioned groups of storage devices, maximal aggregate number of viewers for each of said at least two storage devices or partitioned groups of storage devices, or a combination thereof.

In an I/O resource management, DE VOS discloses portioned groups of storage devices, maximal aggregate number of viewers [i.e. number of end users increases] for

each of said at least two storage devices or partitioned groups of storage devices, or a combination thereof [paragraphs 0050-0051].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Goldzmidt in view of DE VOS by calculating a maximal aggregate consumption rate and maximal aggregate number of viewers because this feature will dynamically change to prevent the system from overloading [DE VOS, paragraph 000051]. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Goldzmidt in view of DE VOS in order to determine the number of end devices requesting the particular video and/or audio at a specific point in time [DE VOS, paragraph 0050].

42. With respect to claim 202, Goldzmidt further teaches said resource manager is capable of managing one or more said I/O resources for delivery of said continuous media data to said plurality of viewers [i.e. a large number of incoming client agents] based at least in part on said modeled utilization [see abstract and col.3, lns.27-40].

43. With respect to claim 203, Goldzmidt further teaches said resource manager is capable of balancing [i.e. load-balancing heuristics] said I/O capacity with said buffer memory space to ensure uninterrupted delivery of said continuous media data to said plurality of viewers from said at least two storage devices or said at least two partitioned groups of storage devices [col.5, ln.49 - col.6, ln.60].

44. With respect to claim 204, Goldzmidt further teaches said I/O resource manager [i.e. control server] is capable of at least one of performing I/O admission control [i.e. uses the workload-related heuristics for its client admission process], determining read-ahead size, or a combination thereof [col.15, ln.66 - col.16, ln.22].

45. With respect to claim 213, Goldzmidt further teaches said monitoring agent is capable of monitoring number of outstanding I/O requests [i.e. a large number of incoming client agents] in at least one storage device or group of storage devices [col.3, lns.12-55]; and said storage system workload monitor is capable of monitoring a the workload of the streaming server being served by at least one logical volume contained at least in part on said at least one storage device or partitioned group of storage devices [col.5, lns.4-54 i.e. each virtual encapsulated cluster appears as a single], and monitoring the aggregated data consumption rates [col.9, lns.6-22 i.e. monitor the effective bit rate of the stream] based on the current number of connection stream [col.8, lns.43-54] being served by at least one logical volume contained at least in part on said at least one storage device or partitioned group of storage devices.

However, Goldzmidt is silent on said storage system workload monitor is capable of monitoring a number of viewers.

In an I/O resource management, DE VOS discloses said storage system workload monitor is capable of monitoring a number of viewers [paragraph 0050 i.e. monitoring of the number of end devices] being served by memory means [paragraph 0048].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Goldzmidt in view of DE VOS by capable of monitoring a number of viewers because this feature will dynamically change to prevent the system from overloading [DE VOS, paragraph 000051]. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Goldzmidt in view of DE VOS in order to determine the number of end devices requesting the particular video and/or audio at a specific point in time [DE VOS, paragraph 0050].

46. With respect to claim 214, Goldzmidt further teaches said information management system comprises a content delivery system [i.e. streaming server]; wherein delivered information comprises continuous media data [col.2, ln.65 - col.3, ln.11]; and wherein said storage system includes two or more storage devices or two or more partitioned groups of storage devices for delivery of said continuous media data [col.5, lns.4-54 i.e. each virtual encapsulated cluster appears as a single].

47. With respect to claims 215-218, and 227, Goldzmidt furter teaches said monitoring agent is capable of monitoring a number of outstanding I/O requests [i.e. a large number of incoming client agents] for at least portion of each of said at least two storage devices [col.3, lns.12-55] or at least two partitioned groups of storage devices; and wherein said storage system workload monitor [col.8, ln.44 - col.9, ln.22] is capable of: determining an estimated aggregated data consumption rate [col.9, lns.6-22 i.e.

monitor the effective bit rate of the stream] for each of said at least two storage devices or at least two partitioned groups of storage devices based at least in part on said estimated aggregated data consumption rate for said number of viewers being served by said at least a portion of each of said at least two storage devices or at least two partitioned groups of storage devices, and said monitored number of outstanding I/O requests for at least a portion of each of said at least two storage devices or at least two partitioned groups of storage devices [col.8, lns.43-54].

However, Goldzmidt is silent on monitoring a number of viewers [i.e. monitoring of the number of end devices] being served by at least portion of each of said at least two storage devices or at least two partitioned groups of storage devices, and monitoring the aggregated data consumption rates for said number of viewers being served by said at least a portion of each of said at least two storage devices or at least two partitioned groups of storage devices.

In an I/O resource management, DE VOS discloses monitoring a number of viewers [i.e. monitoring of the number of end devices] and determining an estimated total number of viewers [i.e. determined based on certain statistics or real time monitoring of the number of end devices requesting the particular video and/or audio program at a specific point in time] being served by memory means [paragraphs 0048-0051].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Goldzmidt in view of DE VOS by capable of monitoring a number of viewers because this feature will dynamically change to prevent

the system from overloading [DE VOS, paragraph 000051]. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify Goldzmidt in view of DE VOS in order to determine the number of end devices requesting the particular video and/or audio at a specific point in time [DE VOS, paragraph 0050].

48. With respect to claim 219, Goldzmidt further teaches each of said storage device comprise storage disk drives [figs.1-3 i.e. cluster].

49. With respect to claim 228, Goldzmidt further teaches said storage system workload monitor is capable of determining a workload weight distribution for each of said storage devices [col.4, lns.26-53 and col.5, lns.50-64] or partitioned group of storage devices based at least in part on said monitored number of outstanding I/O requests for each storage device or partitioned group of storage devices.

Allowable Subject Matter

50. Claims 220-226 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

51. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. "Recovery from failure of a data processor in a network server," by Vahalia et al., U.S. Patent No. 6,275,953.

b. "Multi-tier data storage system," by Loh et al., U.S. Patent No. 6,839,803.

c. "System for managing computer resources across a distributed computing environment by first reading discovery information about how to determine system resources presence," by Bonnell et al., U.S. Patent No. 5,978,594.

52. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghi V Tran whose telephone number is (571) 272-4067. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarni Maung can be reached on (571) 272-3939. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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